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AMENDMENTS

Please amend the claims as follows:

1. (previously presented) A method for forming a synthetic elevation aperture, the method comprising:

(a) acquiring at least first and second sets of ultrasound data, the first set of ultrasound data associated with a different elevation position than the second set of ultrasound data;

(b) forming a beam across a synthetic elevation aperture as a function of the first and second sets of ultrasound data, the forming being a broadband process; and

(c) generating a three-dimensional representation as a function of the beam.

2. (original) The method of Claim 1 wherein (b) comprises forming with delay-and-sum beamformation.

3. (original) The method of Claim 2 wherein (b) comprises:

(b1) determining a first delay for a particular spatial location as a function of a first distance from an array to a first data set focal point and a second distance from the first data set focal point to the particular spatial location; and

(b2) applying the first delay to a first data sample from the first set of ultrasound data;

(b3) determining a second delay for the particular spatial location as a function of a third distance from the array to a second data set focal point and a fourth distance from the second data set focal point to the particular spatial location; and

(b4) applying the second delay to a second data sample from the second set of ultrasound data; and

(b5) summing the first and second data samples.

4. (original) The method of Claim 2 wherein (b) comprises performing complex addition of coherent data as a function of data samples spatial location relative to a desired spatial location.

5. (withdrawn) The method of Claim 1 wherein (b) comprises forming with frequency-domain beamformation.

6. (withdrawn) The method of Claim 5 wherein (b) comprises:

(b1) applying a spatial-temporal Fourier transform;

(b2) interpolating in the frequency domain; and

(b3) applying an inverse spatial-temporal Fourier transform.

7. (original) The method of Claim 1 wherein (a) comprises acquiring the first and second sets of ultrasound data, the first and second sets of ultrasound data being for elements of an array spaced along an azimuth dimension, and wherein (b) comprises performing two-dimensional beamformation along the elevation and azimuth dimensions.

8. (currently amended) A method for forming a synthetic elevation aperture, the method comprising:

(a) acquiring at least first and second sets of ultrasound data, the first set of ultrasound data associated with a different elevation position than the second set of ultrasound data; and

(b) forming a beam across a synthetic elevation aperture as a function of the first and second sets of ultrasound data, the forming being a broadband process;

wherein (a) comprises acquiring beamformed data as the first and second sets of ultrasound data, and wherein (b) comprises forming the beam from the beamformed data; and

(c) generating an image as a function of the beam.

9. (withdrawn) The method of Claim 1 wherein (a) comprises:

(a1) acquiring the first set of ultrasound data with a first aperture;

(a2) acquiring the second set of ultrasound data with a second aperture, the second aperture rotated within an elevation-azimuth plane relative to the first aperture, the rotation such that foci of the first and second apertures overlap.

10. (currently amended) A system for forming a synthetic elevation aperture, the system comprising:

a memory operable to store at least first and second sets of ultrasound data, the first set of ultrasound data associated with a different elevation position than the second set of ultrasound data; ~~and~~

a beamformer operable to form a beam across a synthetic elevation aperture as a function of the first and second sets of ultrasound data, the forming being a broadband process; and

an image processor operable to generate a three-dimensional image as a function of the beam.

11. (original) The system of Claim 10 wherein the first and second sets of data correspond to receiving at different times, and wherein the beamformer is operable to perform delay-and-sum beamformation along an elevation aperture.

12-34. (cancelled)

35. (currently amended) A method for forming a synthetic elevation aperture, the method comprising:

(a) acquiring at least first and second sets of ultrasound data, the first set of ultrasound data associated with a different elevation position than the second set of ultrasound data;

(b) forming a plurality of different elevationally spaced beams across a synthetic elevation aperture as a function of the first and second sets of ultrasound data, the forming being a broadband process; and

(c) generating an image as a function of the beam.